We chose to investigate if the size of dots might affect people's estimation of the number of black dots on an A4 piece of paper.

①

We carried out this experiment by preparing A4 sheets one with very small black dots (diameter of 2mm) and the other with larger black dots (diameter of 6mm). each piece of paper had the dots randomly scattered throughout the page. We did this to try and prevent the people taking part in the experiment, being able to count the dots or come up with some sort of method that they could guess the number the number of dots on the page. The students who did our experiment were two year nine maths classes. We then went into each class the got each student to select a piece of paper one piece had a 1 on it and the other had 2 on it. We then got all the students with 1 on it to go to another room and all the students with 2 on the piece of paper to come into this room. The classes were chosen for us so we could get some silly answers.

③ ② ④

The overall design of my experiment will involve a comparison of two independent groups. Students will be given only one of the A4 pages of dots. The student will estimate the number of dots on the A4 page. Each group will be shown the A4 page for 1 minute on a power point slide at the front of the room. and then be given 30 seconds to write down their answer The students will also be told not to communicate to one another while the experiment is running.

⑤

A4 paper/ =size of dot	Estimated dots	A4 paper/size of dot	Estimated dots
two mm dots	152	six mm dots	134
two mm dots	163	six mm dots	129
two mm dots	137	six mm dots	137
two mm dots	141	six mm dots	132
two mm dots	153	six mm dots	134
two mm dots	168	six mm dots	122
two mm dots	146	six mm dots	115
two mm dots	170	six mm dots	120
two mm dots	138	six mm dots	131
two mm dots	146	six mm dots	124
two mm dots	152	six mm dots	126
two mm dots	137	six mm dots	121
two mm dots	159	six mm dots	117
two mm dots	168	six mm dots	119
two mm dots	184	six mm dots	121
two mm dots	167	six mm dots	142
two mm dots	148	six mm dots	123
two mm dots	142	six mm dots	118
two mm dots	149	six mm dots	120

two mm dots	168	six mm dots	134
two mm dots	154	six mm dots	124
two mm dots	153		

I did the randomisation test using the means. This will take the values from the groups and randomly re-assign them to one of the two groups and calculate the difference between the re-randomised group medians 1000 times. The results are below:

Estimated number of dots (A4 paper)
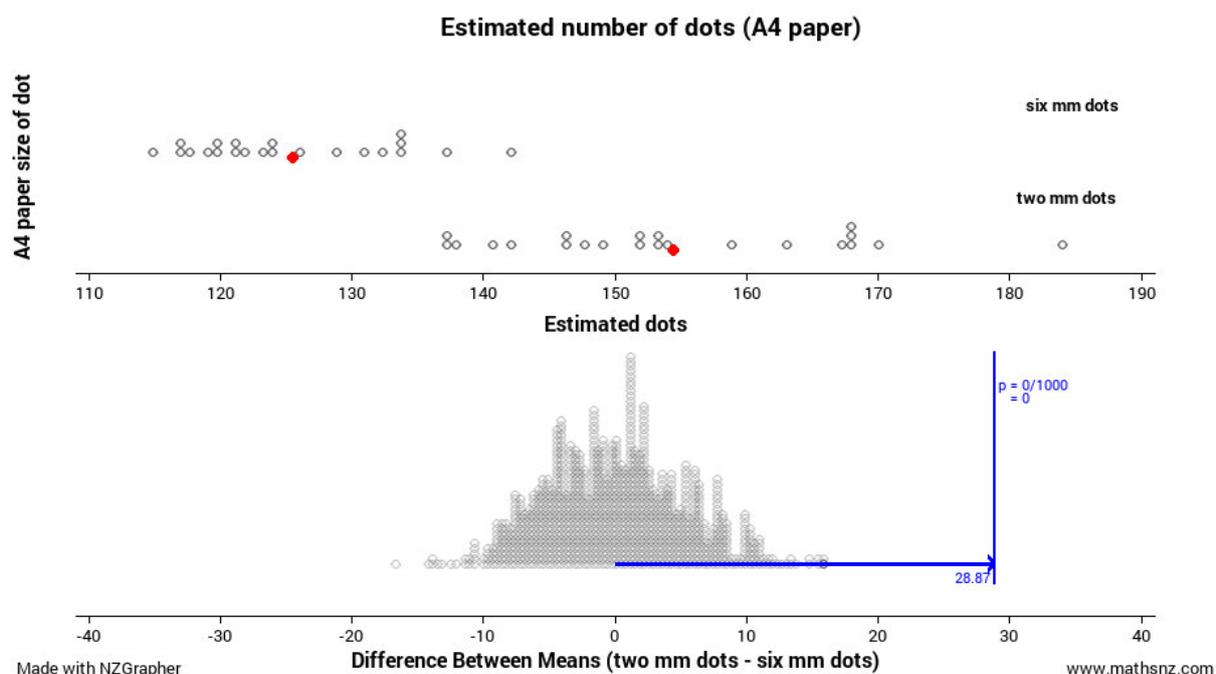
⑦

A difference of 2.077 dots came up once out of 1000 for the re-randomised differences.
I can therefore conclude that the size of dots might does not affect people's estimation of the number of black dots on an A4 piece of paper.

My experiment was not designed well. The students could not clearly and confidently estimate the number of black dots on a A4 piece of paper. This was probably due to fact that we had too many black dots on each A4 piece of paper and it was difficult to see the small black dots when it was put onto the power point slide.   ⑥